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BORIS NIKOLAYEVICH DELONE

The Scientific Council of the Mathematics Institute imeni V. A. Steklov, Academy of Sciences USSR, met in a jubilee session recently to celebrate the 60th birthday and 40th year of scientific and pedagogical activity of Boris Nikolayevich Delone, Corresponding Member of the Academy of Sciences USSR.

Delone's activities were highlighted in reports submitted by Prof D. K. Faddeyev ("Life and Activity of B. N. Delone"), A. D. Aleksandrov, Corresponding Member of the Academy of Sciences USSR ("B. N. Delone's Work in the Field of Geometry"), Prof B. A. Venkov ("B. N. Delone's Work in the Theory of Numbers"), I. R. Shafarevich, Doctor of Physicomathematical Sciences ("B. N. Delone's Work in the Field of Algebra"), and I. V. Oreimov, Corresponding Member of the Academy of Sciences USSR ("B. N. Delone's Work in the Field of Crystallography").

Delone is one of the foremost Soviet scientists in mathematics and is credited with many valuable achievements in this field. Even his first published work, which was published shortly after his graduation from Kiev University in 1913, revealed him to be an expert in some very finely defined fields of algebra and the theory of numbers. Recent research by Delone on the theory of indeterminate cubic equations has been of fundamental importance to mathematicians all over the world.

Delone was invited to be a professor at Petersburg University where he continued his work on the theory of numbers, and made his initial studies in the field of geometry. At the same time, he expressed a vital interest in natural science and technology, which later was a factor in his decision to conduct research on the geometry of crystals. Later he published several works on the geometry of polyhedra, the geometry of numbers, and crystallography.

Delone's work on the theory of polyhedra appeared to be a continuation of Ye. S. Fedorov's research, which was based on the theory of correct division of space. Delone is credited with originating the "empty sphere method," the "laminar structure method," and also a final solution of the very difficult problem of establishing all the correct "pulses" of three- and four-dimensional space. To date these results have not been surpassed. The methods introduced by Delone were later used by many of his students in their research and development activities.

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In the field of the geometry of numbers, Delone is listed as the orginator of a series of finely defined subjects of varied nature, all of which bear pure geometrical characteristics. In recent years he has realized some important results in this field. Delone's work on the geometry of numbers is a direct continuation of G. F. Voronov's work.

Among Delone's works on crystallography, special importance must be given to his work which resulted in solving problems connected with flat crystalline lattices, on the basis of points within these lattices. This has proved of inestimable value to modern methods of x-ray analysis of crystals. Delone's work on the correct representation of a crystal was a noteworthy chapter in the field of classic geometry of crystals. Both of these works, which were completed after Ye. S. Fedorov, represent research in the field of geometrical crystallography.

From 1934 to 1935, Delone once again took up studies in the field of algebra and attempted to apply geometric methods in solving algebraic problems. With renewed vigor he attacked the basic problem in the theory of equations -- namely, the problem of setting up equations with given groups -- and solved them by applying solvable groups, in one important particular case. In connection with these studies Delone, through the use of geometry, introduced a completely new concept in the field of algebra -- namely, the "compactness" of equations with a given group.

The field of mathematics did not gain from Delone's works alone. Many of his students developed refinements in Delone's specific fields, while others rejected his views and, at the same time, developed new and valuable ideas along completely different lines. Thus the famous mathematician N. G. Chebotarev, who in his autobiography lists himself as a student of Delone, achieved many of his solutions of complex mathematical problems by using basic theories which interested Delone in 1914 and 1915.

Professor V. A. Tartakovskiy and Professor D. K. Faddeyev achieved some fine results with indeterminate equations. In the field of roentgenography, in which Delone solved the problem of determining the quadratic form according to the numbers represented by it (form) in the case of two variables, his theories were reflected in works by Professor Tartakovskiy (for cases of four or more variables) and Yu. V. Linnik (three variables).

As a student of geometry, Delone made his influence felt on all the mathematicians who were associated with him. This influence later served to help B. A. Venkov and A. D. Aleksandrov in developing their own noteworthy original works. D. K. Faddeyev and I. R. Shafarevich undertook research started by Delone on the theory of equations and other directly related fields.

Since 1921 Delone has been in continual attendance as an instructor in mathematics at Leningrad and Moscow Universities. The basic subjects of his lectures are constantly increasing and include the most varied fields in mathematics, from the theory of numbers and algebra to Lobachevskiy's geometry and crystallography. Next year (1951), in connection with the institution of a course of applied mathematics in the Mechanical-Mathematical Faculty, Moscow State University, Delone will be the first in the USSR to undertake a course on computing machines.

The results of the scientific and teaching activities of Delone were promulgated in such works as "Theory of Irrationality of Cubics," "Mechanical Fundamentals of the Structural Analysis of Crystals," Courses in Analytic Geometry," and others, which were written by Delone along with some of his students.

A considerable amount of interest was displayed in a report read by V. F. Nesterov, Honored Master of Sport, on "Activities of B. N. Delone in the Field of Alpine Sports." This was to commemorate the fact that Delone was one of the most active agitators in a program which lead to the introduction of alpine climbing to the peoples of the USSR, and to the organization of the first alpine camp in 1931 (in cooperation with the "Krasnyy Putilovets" Plant).

Delone is also credited with being the first to organize school competitions (olympiads) in the field of mathematics. These competitions have done much to make the peoples of the USSR mathematics-conscious.

On this memorable occasion Delone was showered with greetings and congratulations from the Presidium of the Academy of Sciences USSR, the Department of Physicomathematical Sciences and other institutes of the Academy of Sciences, the Mechanicomathematical Faculties of Moscow and Leningrad Universities, the Moscow Mathematics Society, the Ukrainian Academy of Sciences, the Alpine Section of the All-Union Committee on Matters of Physical Culture and Sports, as well as from many independent scientific and social activities and personalities.

In his speech of acknowledgement, Delone noted the valuable influence of the state's interest in science and also gave thanks to the fine work done by his students and associates.

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